## Release notes for ENDF/B Development n-051\_Sb\_121 evaluation



April 26, 2017

- checkr Warnings:
  - 1. A previous error halted parsing of the current section  $MAT=5125,\ MF=1,\ MT=451\ (1)$ : Parsing stopped

ERROR(S) FOUND IN MAT=5125, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER 106 TO 149

- checkr Errors:
  - 1. A variable is outside the allowed ENDF range MAT=5125, MF=1, MT=451 (0): Variable range

ERROR(S) FOUND IN MAT=5125, MF= 1, MT=451
MOD = 1 OUT OF RANGE 0 - 0 RECORD NUMBER 106

2. Missing a section in directory so your directory is messed up. This error will break everything else  $MAT=5125,\ MF=2,\ MT=151\ (0)$ : Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 2, MT=151
SECTION 2/151 NOT IN DIRECTORY RECORD NUMBER 151

3. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=1 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 1
SECTION 3/ 1 NOT IN DIRECTORY RECORD NUMBER 581

4. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=2 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 2
SECTION 3/ 2 NOT IN DIRECTORY RECORD NUMBER 610

5. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=3 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 3
SECTION 3/ 3 NOT IN DIRECTORY RECORD NUMBER 636

6. Missing a section in directory so your directory is messed up. This error will break everything else  $MAT=5125,\ MF=3,\ MT=4\ (0)$ : Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 4
SECTION 3/ 4 NOT IN DIRECTORY RECORD NUMBER 665

7. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=16 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 16 SECTION 3/ 16 NOT IN DIRECTORY

RECORD NUMBER 69

8. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 17 SECTION 3/ 17 NOT IN DIRECTORY

RECORD NUMBER 706

9. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=22 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 22 SECTION 3/ 22 NOT IN DIRECTORY

RECORD NUMBER 713

10. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 28 SECTION 3/ 28 NOT IN DIRECTORY

RECORD NUMBER 721

11. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=51 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 51 SECTION 3/ 51 NOT IN DIRECTORY

RECORD NUMBER 732

12. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=52 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 52 SECTION 3/ 52 NOT IN DIRECTORY

RECORD NUMBER 760

13. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=53 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 53 SECTION 3/ 53 NOT IN DIRECTORY

RECORD NUMBER 784

14. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=54 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 54 SECTION 3/ 54 NOT IN DIRECTORY

RECORD NUMBER 807

15. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=55 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 55 SECTION 3/ 55 NOT IN DIRECTORY

RECORD NUMBER 82

16. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 56 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 56 SECTION 3/ 56 NOT IN DIRECTORY

RECORD NUMBER 850

17. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 57 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 57 SECTION 3/ 57 NOT IN DIRECTORY

RECORD NUMBER 871

18. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 58 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 58 SECTION 3/ 58 NOT IN DIRECTORY

RECORD NUMBER 892

19. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 91 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT= 91 SECTION 3/ 91 NOT IN DIRECTORY

RECORD NUMBER 912

20. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=102 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT=102 SECTION 3/102 NOT IN DIRECTORY

RECORD NUMBER 931

21. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 103 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT=103 SECTION 3/103 NOT IN DIRECTORY

RECORD NUMBER 957

22. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=104 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT=104 SECTION 3/104 NOT IN DIRECTORY

RECORD NUMBER 976

23. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=3, MT=105 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT=105 SECTION 3/105 NOT IN DIRECTORY

RECORD NUMBER 991

24. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 3, MT = 107 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 3, MT=107 SECTION 3/107 NOT IN DIRECTORY

RECORD NUMBER 1003

25. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 4, MT = 2 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 2 SECTION 4/ 2 NOT IN DIRECTORY

RECORD NUMBER 1018

26. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 4, MT = 16 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 16 SECTION 4/ 16 NOT IN DIRECTORY

RECORD NUMBER 1330

27. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=17 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 17

SECTION 4/ 17 NOT IN DIRECTORY

RECORD NUMBER 1385

28. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=22 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 22

SECTION 4/ 22 NOT IN DIRECTORY

RECORD NUMBER 1408

29. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 4, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 28 SECTION 4/ 28 NOT IN DIRECTORY

RECORD NUMBER 1435

30. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=51 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 51 SECTION 4/ 51 NOT IN DIRECTORY

RECORD NUMBER 1478

31. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=52 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 52 SECTION 4/ 52 NOT IN DIRECTORY

RECORD NUMBER 1794

32. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 4, MT = 53 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 53 SECTION 4/ 53 NOT IN DIRECTORY

RECORD NUMBER 2083

33. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=54 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 54

SECTION 4/54 NOT IN DIRECTORY

RECORD NUMBER 2364

34. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=55 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 55 SECTION 4/ 55 NOT IN DIRECTORY

RECORD NUMBER 2626

35. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=56 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 56 SECTION 4/ 56 NOT IN DIRECTORY

RECORD NUMBER 2883

36. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=57 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 57 SECTION 4/ 57 NOT IN DIRECTORY

RECORD NUMBER 3135

37. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=58 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 58 SECTION 4/ 58 NOT IN DIRECTORY

RECORD NUMBER 3363

38. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=4, MT=91 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 4, MT= 91 SECTION 4/ 91 NOT IN DIRECTORY

RECORD NUMBER 3599

39. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=5, MT=16 (0): Directory (b)

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ERROR(S) FOUND IN MAT=5125, MF= 5, MT= 16
SECTION 5/ 16 NOT IN DIRECTORY
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RECORD NUMBER 3693

40. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 5, MT = 17 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 5, MT= 17 SECTION 5/ 17 NOT IN DIRECTORY

RECORD NUMBER 3943

41. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 5, MT = 22 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 5, MT= 22 SECTION 5/ 22 NOT IN DIRECTORY

RECORD NUMBER 4026

42. Missing a section in directory so your directory is messed up. This error will break everything else

MAT = 5125, MF = 5, MT = 28 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 5, MT= 28 SECTION 5/ 28 NOT IN DIRECTORY

RECORD NUMBER 4129

43. Missing a section in directory so your directory is messed up. This error will break everything else MAT=5125, MF=5, MT=91 (0): Directory (b)

ERROR(S) FOUND IN MAT=5125, MF= 5, MT= 91 SECTION 5/ 91 NOT IN DIRECTORY

RECORD NUMBER 4312

- psyche Warnings:
  - 1. Strength function in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ISOTOPE MASS = 121. L = 1 / STRENGTH FUNCTION IS 2.34188E-05 / STRENGTH FUNCTION 2.34188E-05 / LIES OUTSIDE LIMITS 1.00000E-04 TO 8.00000E-04 (0): URR str. ftn.

FILE 2

SECTION 151

ISOTOPE MASS = 121. L = 1

STRENGTH FUNCTION IS 2.34188E-05

STRENGTH FUNCTION 2.34188E-05

- ... [1 more lines]
- 2. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 2.99997E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 2.86063E-05 / DENSITY 2.86930E+01 SHOULD BE 2.84079E+01 (0): URR dens. (a)

FILE 2

SECTION 151

ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 2.99997E-05 ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 2.86063E-05 DENSITY 2.86930E+01 SHOULD BE 2.84079E+01 3. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 2.53587E-04 / DENSITY 2.25390E+01 SHOULD BE 2.22060E+01 (0): URR dens. (a)

FILE 2 SECTION 151

ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 2.53587E-04

DENSITY 2.25390E+01 SHOULD BE 2.22060E+01

4. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.59992E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.44529E-05 / DENSITY 6.46180E+01 SHOULD BE 6.79500E+01 (0): URR dens. (a)

FILE 2

SECTION 151

ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.59992E-05 ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.44529E-05 DENSITY 6.46180E+01 SHOULD BE 6.79500E+01

5. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.59992E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.34209E-05 / DENSITY 3.87710E+01 SHOULD BE 4.07700E+01 (0): URR dens. (a)

FILE 2

SECTION 151

ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.59992E-05 ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.34209E-05 DENSITY 3.87710E+01 SHOULD BE 4.07700E+01

6. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60127E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60012E-05 / DENSITY 2.76930E+01 SHOULD BE 2.91214E+01 (0): URR dens. (a)

FILE 2

SECTION 151

ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60127E-05 ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60012E-05 DENSITY 2.76930E+01 SHOULD BE 2.91214E+01

7. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60019E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60017E-05 / DENSITY 2.15390E+01 SHOULD BE 2.26500E+01 (0): URR dens. (a)

FILE 2

SECTION 151

ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60019E-05 ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60017E-05 DENSITY 2.15390E+01 SHOULD BE 2.26500E+01

8. Level density in URR not in agreement with PSYCHE's expectations FILE 2 / SECTION 151 / ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60007E-05 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60030E-05 /

```
FILE 2
SECTION 151
ENERGY = 5.40000E+03. STRENGTH FUNCTION IS 7.60007E-05
ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 7.60030E-05
DENSITY 1.76230E+01 SHOULD BE 1.85318E+01
```

- recent Warnings:
  - 1. Statistical weight of certain L values were incorrect 0: RRR goof (a)

- fudge-4.0 Warnings:
  - 1. Missing a channel with a particular angular momenta combination resonances / resolved (Error # 1): missingResonanceChannel

```
WARNING: Missing a channel with angular momenta combination L=0, J=1.0 and S=1.0 for "capture" WARNING: Missing a channel with angular momenta combination L=1, J=1.0 and S=1.0 for "capture" WARNING: Missing a channel with angular momenta combination L=1, J=2.0 and S=1.0 for "capture" WARNING: Missing a channel with angular momenta combination L=1, J=2.0 and S=2.0 for "capture" ... plus 1 more instances of this message
```

2. Cross section does not match sum of linked reaction cross sections  $crossSectionSum\ label\ \theta\colon\ total\ (Error\ \#\ \theta)\colon\ CS\ Sum.$ 

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.23%

- fudge-4.0 Errors:
  - 1. The spin statistical weights are off, indicating missing channels resonances / resolved / MultiLevel\_BreitWigner (Error # 0): badSpinStatisticalWeights

WARNING: The spin statical weights for L=1 sums to 2.0, but should sum to 3.0. You have too few channels for re

2. Energy range of data set does not match cross section range reaction label 3: n + Sb121\_e3 / Product: n / Distribution: / angularTwoBody - XYs2d: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (577880.0 -> 20000000.0) vs (577900.0 -> 20000000.0)

3. Calculated and tabulated Q values disagree. reaction label 10: n[multiplicity:'2'] + Sb120 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -4726301.111694336 eV vs -9239201. eV!

4. Energy range of data set does not match cross section range reaction label 10: n[multiplicity:'2'] + Sb120 / Product: n / Distribution: / uncorrelated - angular - XYs2d: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (9316301.0 -> 20000000.0) vs (9316001.0 -> 20000000.0)

5. Energy range of data set does not match cross section range reaction label 10: n[multiplicity:'2'] + Sb120 / Product: n / uncorrelated - energy - XYs2d: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (9316301.0 -> 20000000.0) vs (9316001.0 -> 20000000.0)

6. Calculated and tabulated Q values disagree. reaction label 11: n[multiplicity: '3'] + Sb119 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -11744640.90354919 eV vs -1.6258e7 eV!

7. Calculated and tabulated Q values disagree. reaction label 12: n + H1 + Sn120 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -1263346.547698975 eV vs -5777101. eV!

8. Calculated and tabulated Q values disagree. reaction label 13: Sb122 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 11322044.19381714 eV vs 6807101. eV!

9. Calculated and tabulated Q values disagree. reaction label 14: n + He4 + In117 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 1440678.131835938 eV vs -3.0704e6 eV!

10. Calculated and tabulated Q values disagree. reaction label 15:  $H1 + Sn121\_s$  (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 4906974.104690552 eV vs 285442. eV!

11. Calculated and tabulated Q values disagree. reaction label 16:  $H2 + Sn120\_s$  (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 961219.553237915 eV vs -3.5525e6 eV!

12. Calculated and tabulated Q values disagree. reaction label 17: H3 + Sn119\_s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -1889574.961181641 eV vs -6401501. eV!

13. Calculated and tabulated Q values disagree. reaction label 18: He4 + In118-s (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 7797298.525100708 eV vs 3.2878e6 eV!

• njoy2012 Warnings:

- 1. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

  groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)
  - ---message from conver---cannot do complete particle production for mt= 16 only mf4/mf5 provided
- 2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
  - groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)
  - ---message from conver---cannot do complete particle production for mt= 17 only mf4/mf5 provided
- 3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

  groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)
  - ---message from conver---cannot do complete particle production for mt= 22 only mf4/mf5 provided
- 4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

  groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)
  - ---message from conver---cannot do complete particle production for mt= 28 only mf4/mf5 provided
- 5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!

  groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)
  - ---message from conver---cannot do complete particle production for mt= 91 only mf4/mf5 provided